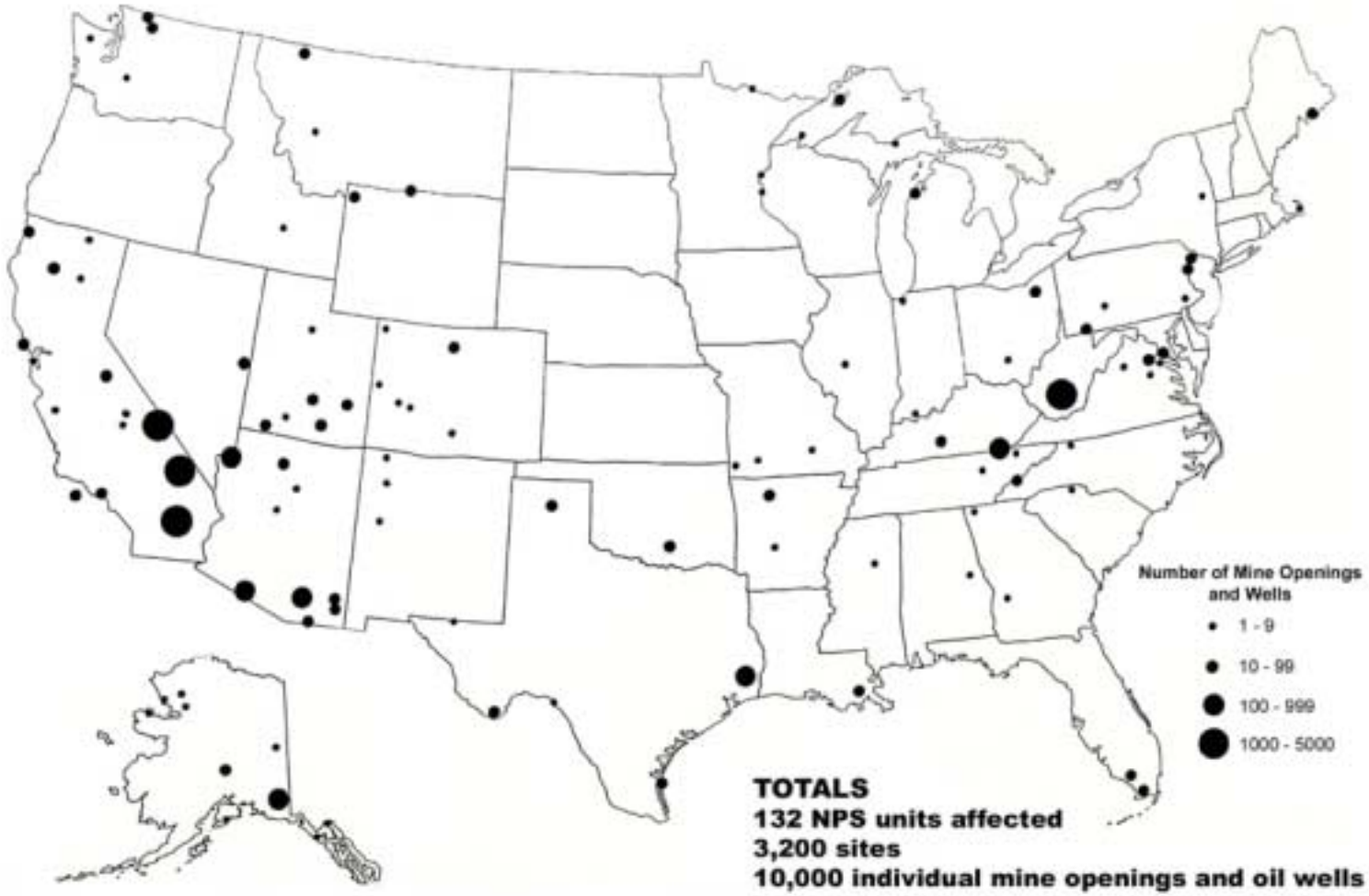
National Park Service

Abandoned Mineral Lands Program (AML)

NATIONAL PARK SYSTEM UNITS WITH ABANDONED MINERAL LANDS



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NPS AML Program - Objectives

- Site inventory, characterization, prioritization
- Elimination of public safety hazards
- Rehabilitation of natural resources affected
- Preserve/interpret culturally significant sites
- Maintain critical wildlife habitat

NPS AML Program

SAFETY

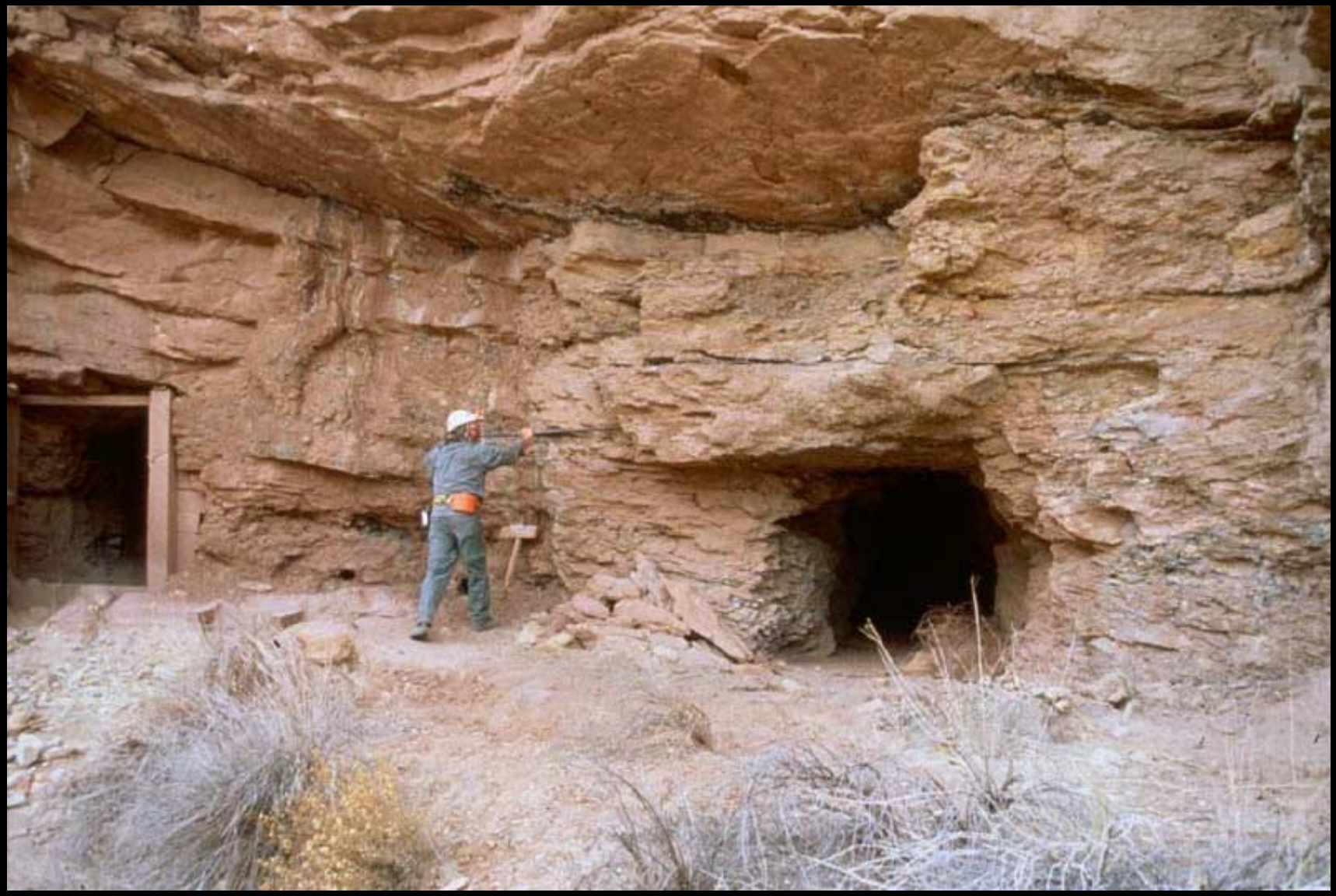
AML Hazards - A Real Issue

Colorado, 1989 - 5 deaths

Abandoned mines are **NOT** caves

Experienced, trained, and equipped personnel

MSHA



DANGER!

ABANDONED MINE HAZARDS

STAY OUT

STAY ALIVE

DANGER!
¡PELIGRO!

ABANDONED MINE HAZARDS
PELIGROS DE MINAS ABANDONADAS

UNSAFE MINE SHAFTS & HIGHWALLS
POZOS DE MINAS PELIGROSOS

DEADLY GAS & LACK OF OXYGEN
GASES MORTALES Y FALTA DE OXIGENO

CAVE-INS & DECAYED TIMBERS
HUNDIMIENTOS Y MADERAS PODRIDAS

UNSAFE LADDERS
ESCALERAS PELIGROSAS

UNSTABLE EXPLOSIVES
EXPLOSIVOS INESTABLES

DEEP POOLS OF WATER
CHARCOS DE AGUA PROFUNDOS

ROTTEN STRUCTURES & EQUIPMENT
ESTRUCTURAS PODRIDAS Y EQUIPOS DAÑADOS

STAY OUT
NO ENTRE

STAY ALIVE
PROTEJA SU VIDA

WARNING

STAY BACK FROM THE EDGE

FOOTING
IS HAZARDOUS

NPS AML Program

Mine Closure Techniques

Dinosaur National Monument (Colorado)
Martin Gold Mine - **Blasting**

Capitol Reef National Park (Utah)
Terry Uranium Mine - **Backfill**


DANGER
KEEP OUT


Super E

Timbers piled together and burned.

(County burning permit acquired.)


580E
580E

Access via dry wash from road two miles south.
Tracks washed out with next flash flood.

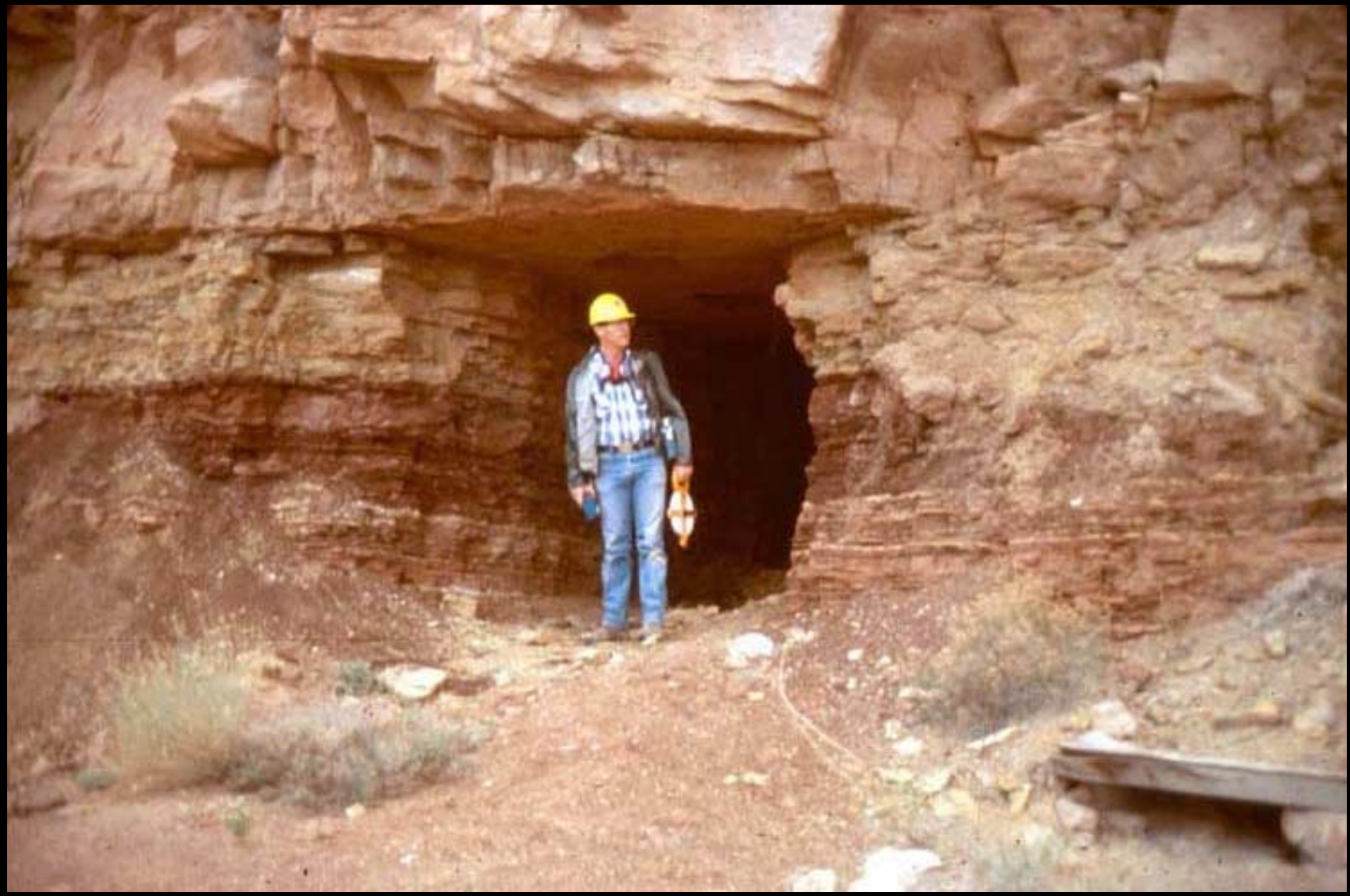
Native seed planted. Straw mulch hand-crimped.

Exclosure fence erected to exclude grazing cattle.

Completed restoration.

Two years later.

Glen Canyon NRA (Utah)
Jomac Uranium Mine (**Native Rock Bulkhead**)



Big Bend National Park (Texas)
Mariscal Mercury Mine (**Chainlink Fence**)

Mariscal / Ellis Mill facilities and tailings

Retort and condenser buildings


DANGER
KEEP OFF

2 '93

Merlin D. Tuttle

Townsend’s big-eared bat
(*Corynorhinus townsendii*)

Western pipistrelle bat (pipistrellus hesperus)

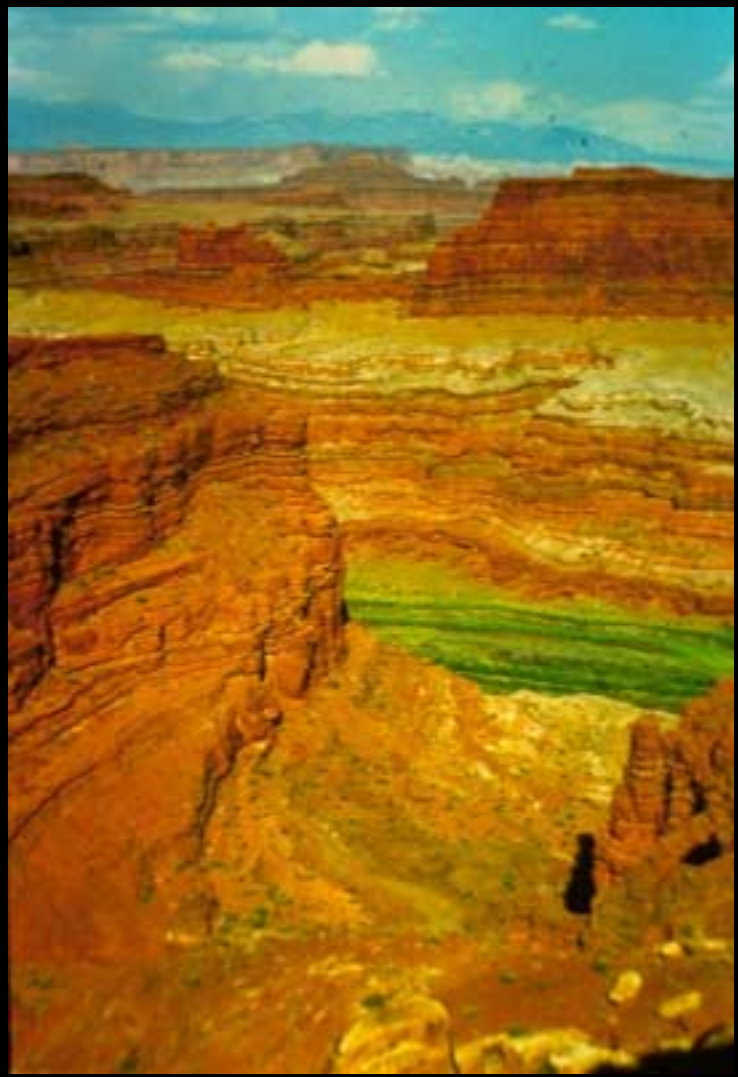
Merlin D. Tuttle

Lesser long-nosed bat (*Leptonycteris curasoae*) at nearby Emory Cave

Merlin D. Tuttle

Lesser long-nosed bat (*Leptonycteris curasoae*)
Faces covered in nectar and pollen

Canyonlands National Park (Utah)
Lathrop Canyon Uranium Mine - **Cable Nets**



White Rim Road - originally ore haulage road


CAUTION
RADIATION AREA
RADIATION LEVELS IN THIS AREA ARE ELEVATED DUE TO URANIUM MINING. A MAXIMUM OF ONE DAY SHOULD BE SPENT IN THE AREA. WATER IN THE VICINITY IS HIGHLY CONTAMINATED AND SHOULD NOT BE INGESTED.
NO CAMPING
DO NOT DRINK THE WATER

Colorado National Monument (Colorado)
Kodel's Gold Mine - **PUF**

National Park Service

California leaf-nosed bat (*Macrotus Californicus*)

Merlin D. Tuttle

Abandoned Mineral Lands Program

Bat Compatible Closures

BAT HABITAT EVALUATION

External Procedures

Bat Detector Survey

Merlin D. Tuttle

Harp Trap - along flight path or in mine entrance

Mist Net

Mist Net - extracting bat

Telemetry - radio transmitter being attached to bat

Telemetry - finding bat roost next day

BAT HABITAT EVALUATION

Conventional Internal Procedures

Fort Bowie National Historic Site (Arizona)
Quillin Gold Mine

Open shaft interconnected with adit

Guano pile with urine-stained roof, above.

Townsend’s big-eared bat
(*Corynorhinus townsendii*)

Merlin D. Tuttle

Maternity Roost - 200-300 bats/sq. ft.

J. Scott Altenbach

Cave myotis (*Myotis velifer*) - 4,000 bats

Merlin D. Tuttle

Cave myotis (*Myotis velifer*)

J. Scott Altenbach

Fringed bat - *Myotis thysanodes*

Merlin D. Tuttle


9 16 '00

BAT HABITAT EVALUATION

Internal Shaft Inspection

(photos courtesy of Scott Altenbach)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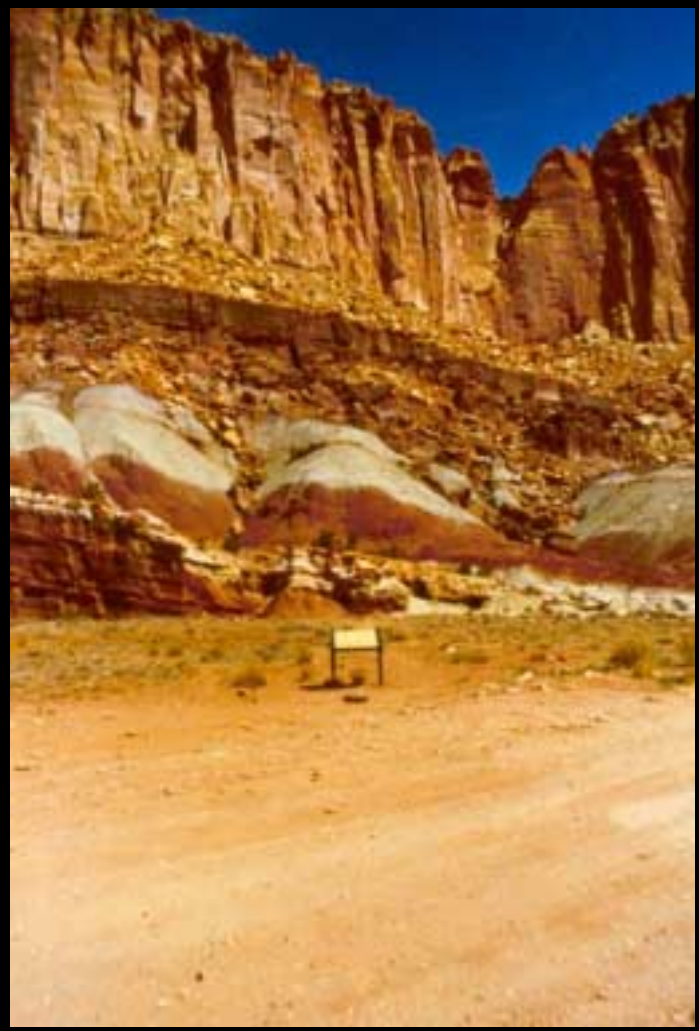
BAT GATE CONSTRUCTION

Capitol Reef National Park (Utah)
Oyler Radium Mine (1993)



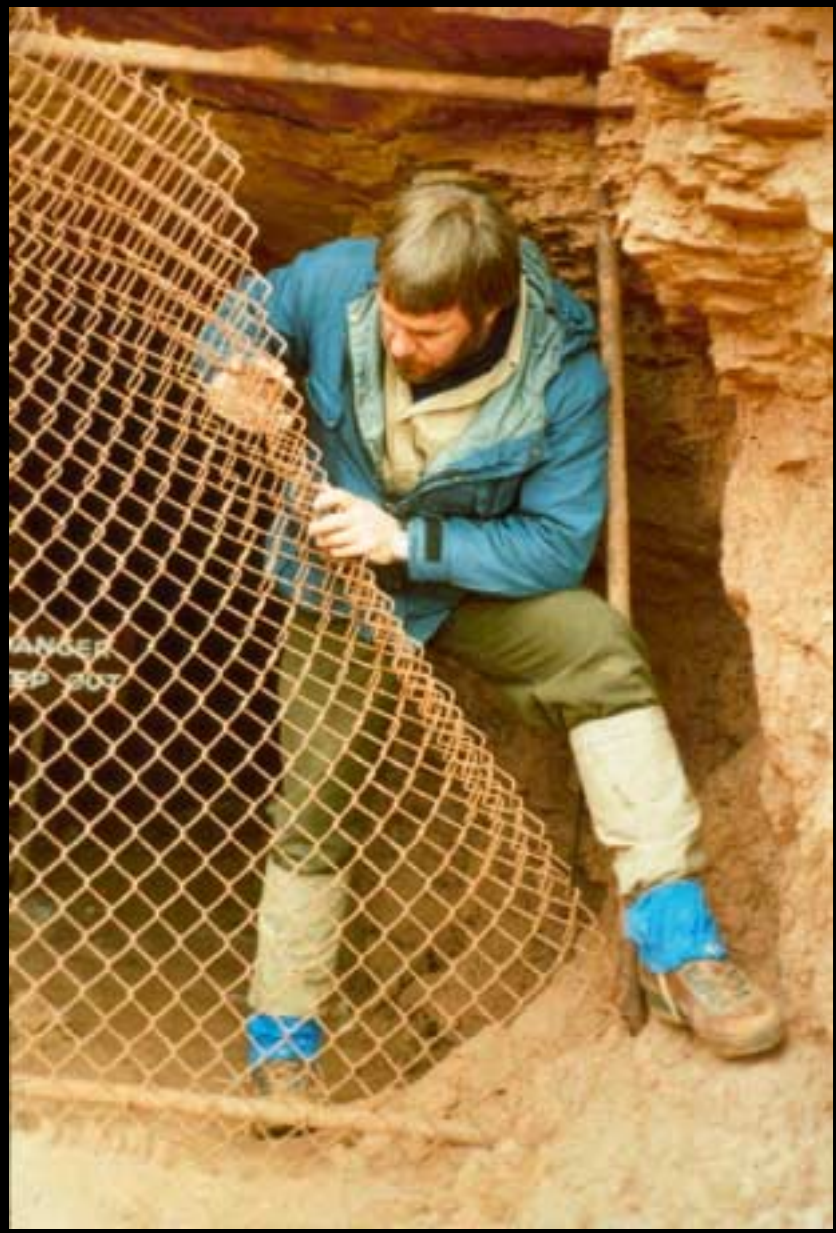
Oyler Mine

Before the atomic bomb, and the uranium boom of the Fifties, this claim was first filed in 1904. Here an early prospector started a stone building, and possibly a corral or pen.

In the 1920's pieces of uranium ore from this mine were ground up and mixed in drinking water, or worn in packets in waistbands or on arthritic joints, to "cure" rheumatism and other ailments. There are no statistics to indicate which was more harmful — the disease or the cure.

The cliff is unstable and subject to rockfall, and potentially dangerous concentrations of radioactive materials may occur within the mine.
Do not attempt to enter the tunnels.

Diagram of Oyler Mine shafts



American Cave and Conservation Association (ACCA) Bat Gate Design

L4"x4"x3/8" angle steel with L1½"x1½"x¼" angle steel "stiffeners"

TEST GATES

Saguaro National Park (Arizona)
Wildhorse Gold Mine - PVC Test Gate

Testing bar spacing - Cave myotis (bachelor colony: 7,000)

Final gate construction post-testing

Coronado National Memorial (Arizona)
State of Texas Mine - Test Cupola (1997-present)

Endangered Lesser Long-nosed bat - migratory colony (25,000)

J. Scott Altenbach

Lesser long-nosed bat (*Leptonycteris curasoae*)

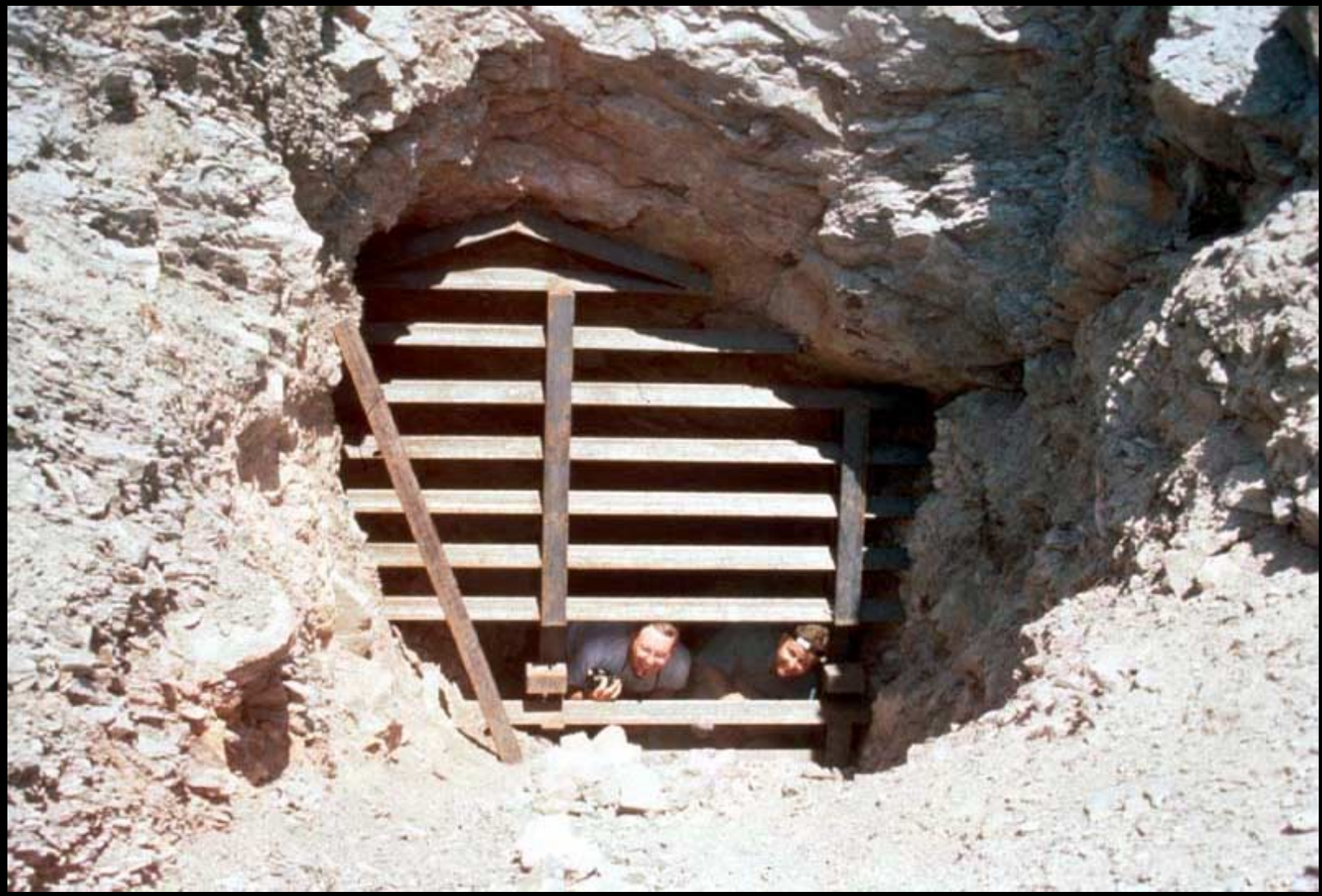
OTHER GATES,

OTHER PARKS

Canyonlands National Park (Utah)
Airport Tower Uranium Mines (1998)

Manganal steel 1” round bar

Big Bend National Park (Texas)
Mariscal Mercury Mine (1995)



Black-tailed rattlesnake awaiting dinner

Culvert-mounted gate where rock stability is poor and ventilation is essential to maintaining habitat

Steel grate where ‘bald shaft’ provides no habitat

Cupola where shaft is interconnected
to mine workings with habitat

Joshua Tree National Park (California)
Sullivan Mine (1999)

Lake Mead National Rec. Area (Nevada / Arizona)

Katherine Access Gold Mine (2002)
Bat gate with desert tortoise access

Copper Mountain Copper/Uranium Mine (2002)
Bat gate with desert tortoise access

PROTECTED HABITAT

This gate was installed for your safety and for the protection of important bat habitat. Your cooperation is greatly appreciated in helping to preserve this environment by not attempting to bypass or vandalize this gate. If you manage to get inside, you could place yourself in great danger from oxygen-deficient air, toxic gases, unstable rock, and vertical drop-offs, and you might harm the bats within by disturbing their habitat.

Bats play vital roles in ecosystems worldwide. Most North American bats eat insects, many of which are crop pests that cost farmers billions of dollars every year. A single bat may consume thousands of insects in one night. Other bats feed on flower nectar and are primary pollinators of desert plants such as the saguaro cactus and the agave. In tropical climates, fruit-eating bats are primary agents in dispersing seeds and thus maintaining forest ecosystems. Contrary to common belief, bats are passive toward humans and are no more prone to carrying diseases such as rabies than most other wild animals. However, any bat or other wild animal that can easily be caught is more likely than others to be sick, and should never be handled.

Because bat habitat is threatened by increased urban development, deforestation, and exploitation of caves, abandoned mines have become critical to the survival of numerous bat species. Depending upon specific factors such as location, airflow, and temperature, bats may use portions of a cave or mine to hibernate in winter, to give birth and raise young, or to stop over during migration or nightly foraging. People entering this mine could cause the bats to abandon their home and could threaten their survival—particularly during hibernation and maternity seasons.

Bats are among the world's most beneficial, yet vulnerable, mammals.
Please help us to protect them.

For more information on bats and their protection, contact:

Bat Conservation International, Inc.
P.O. Box 162603 Austin, TX 78716
(512) 327-9721